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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/714,998	11/17/2003	Bang-Chien Ho	TS02-212	2243

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EXAMINER

ASHTON, ROSEMARY E

ART UNIT PAPER NUMBER

1752

DATE MAILED: 07/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/714,998

Applicant(s)

HO ET AL.

Examiner

Rosemary E. Ashton

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-13 is/are allowed.
- 6) ☒ Claim(s) 14, 17, 28 and 31 is/are rejected.
- 7) ☒ Claim(s) 14-16, 18-27, 29, 30, 32-39 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2/17/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group I, claims 1-39 in the reply filed on 13 April 2005 is acknowledged. Applicant canceled claims 40-46.

Claim Objections

2. Claim 14 is objected to because of the following informalities: Line 1 of the claim has "patter" with no "n". Appropriate correction is required.

Claims 18 and 32 are objected to because of the following informalities: The claims have "ore" with an "e" rather than "or". Appropriate correction is required.

Double Patenting

3. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

4. Claims 14,17,28,31 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over **claims 1,8-14 of copending Application No. 10/443,359** (Ho et al.) Although the conflicting claims are not identical, they are not patentably distinct from each other because while the wording is not the same in the claims the method steps are the same.

Claim 1 of Ho reads on providing a substrate having been provided with a layer of a first photoresist for the creation of holes, exposing the photoresist and creating in the photoresist a pattern of holes.

These steps form the first step in claim 14 of the instant application which reads on providing a substrate with a patterned first resist layer comprised of holes.

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Claim 1 of Ho then reads on depositing a second layer of negative-tone photoresist over the surface of the openings (holes) created in the first photoresist layer, which, while not stated, it is obvious the negative-tone photoresist will fill the opening/holes in the first photoresist layer.

Claim 14 reads on forming a water soluble negative-tone resist on the first patterned resist layer that fills the holes therein. Claim 8 of Ho teaches a water soluble negative-tone photoresist is used.

Claim 1 of Ho then reads on creating openings in the second layer of negative-tone photoresist to form a pattern of holes. The standard method of forming holes or a pattern in a photoresist is to coat the photoresist on a substrate, expose it, typically through a mask, to form a latent image and optional PEB followed by developing the image to form a pattern. While not stated in the claim the exposed holes having photoresist in them will obviously form crosslinked plugs with a thin layer of crosslinked negative photoresist layer in unexposed regions as in claim 14 of the instant application.

Claim 14 reads on patternwise exposing the water soluble negative-tone resist and post-exposure baking (PEB) to form crosslinked plugs in the holes with a thin layer of crosslinked negative photoresist layer in unexposed regions.

Claims 9-13 of Ho are the same as claim 17 of the instant application.

Claim 28 reads on claim 1 because it teaches all that claim 14 teaches except for having an ARC layer on the substrate. It would have been obvious use an ARC on the substrate because an ARC is well known in the art to help diminish light reflected back into the resist layer thus giving better pattern resolution. Claim 31 reads on quencher as does claim 9 of Ho.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Allowable Subject Matter

5. Claims 1-13 are allowed.

6. The following is an examiner's statement of reasons for allowance: No art was found which anticipates or renders obvious a method for manufacturing a microelectronic structure including the steps of forming a pattern resist layer comprised of holes, forming a negative resist layer on the first resist layer

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that fills the holes therein, and with novelty, exposing the negative resist layer through a mask to selectively expose portions of the resist layer within and adjacent to selected holes in a first resist layer.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

7. Claims 15,16,18-27,29,30,32-39 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is a statement of reasons for the indication of allowable subject matter: The prior art does not teach patterning a positive photoresist having an acid with an exposure at 10 nm to 600 nm, using an ARC, different masks and optical parameters as well as hole sizes and hole patterns.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rosemary E. Ashton whose telephone number is 571-272-1326. The examiner can normally be reached on Mon-Fri, 11:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

July 18, 2005



Rosemary E. Ashton
Primary Examiner

**ROSEMARY ASHTON
PRIMARY EXAMINER**